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Toxonothrips gramineae, a Rare Thrips Rediscovered in Western North America

(Thysanoptera : Thripidae)

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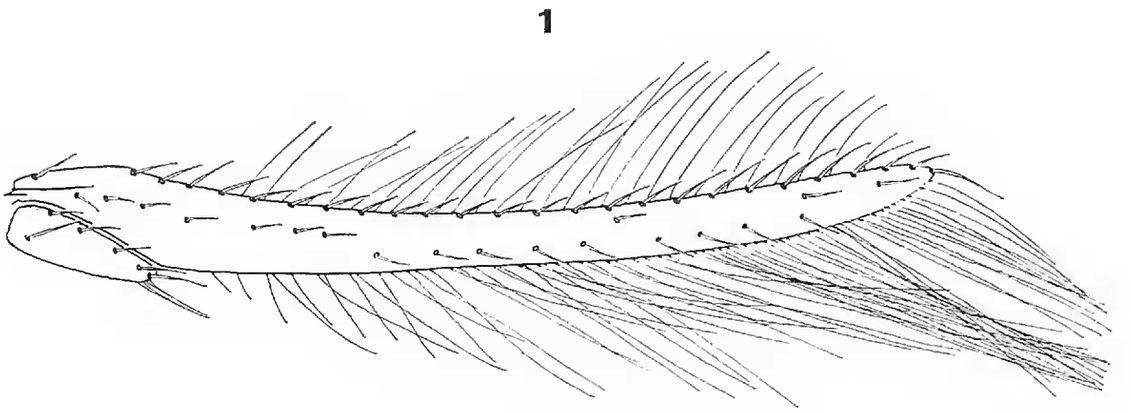
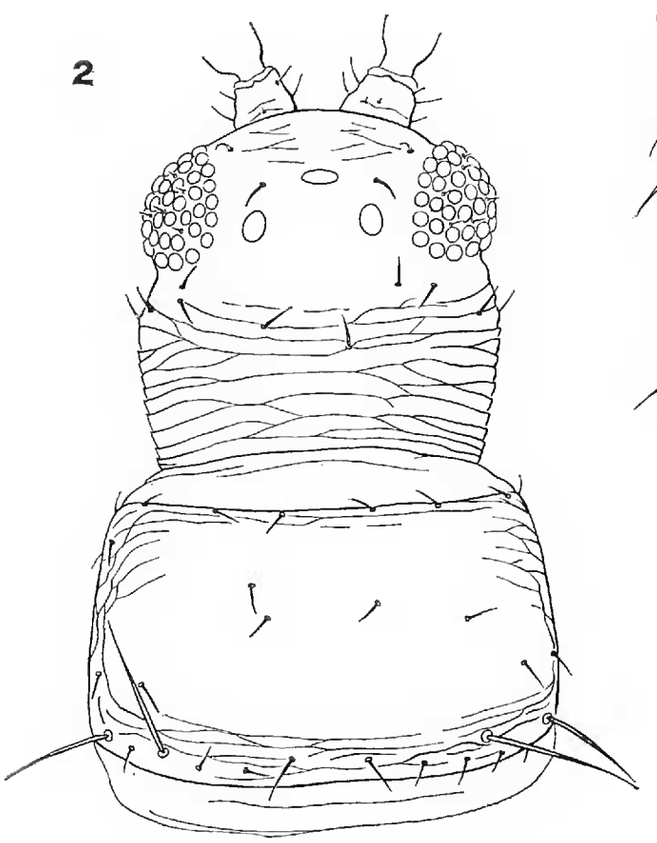
One of the rarest western thrips known to us has been *Toxonothrips gramineae* Moulton. We had searched for it many years with no success (Bailey, 1957). In 1946, Post (1961) collected two specimens in Oregon on sorrel, *Rumex acetosella* L., which he named *Toxonothrips gramineae fuscus*. This stimulated us to try to find *T. gramineae* on this plant as well as on "grass," the host plant of the type specimens taken at Lake Tahoe. However, our results were negative. The next finding was made by Professor Carl H. Lindroth of the Zoological Institute, Lund, Sweden. He made a small collection of thrips near Kodiak, Alaska, 17 June 1962, by sweeping *Carex* and *Calamagrostis* at the margin of a lake. Among the specimens was one apterous female of *T. gramineae*. In 1962, also, H. H. Keifer collected a long series of both sexes in August and September at Battle Creek, Mineral, California, on *Carex nudata* (plants determined by John Thomas Howell, California Academy of Sciences). Again, in 1964, Keifer collected this rare thrips at Camp Sacramento a short distance west of the type locality. Since *Carex* appears to be the preferred host, additional





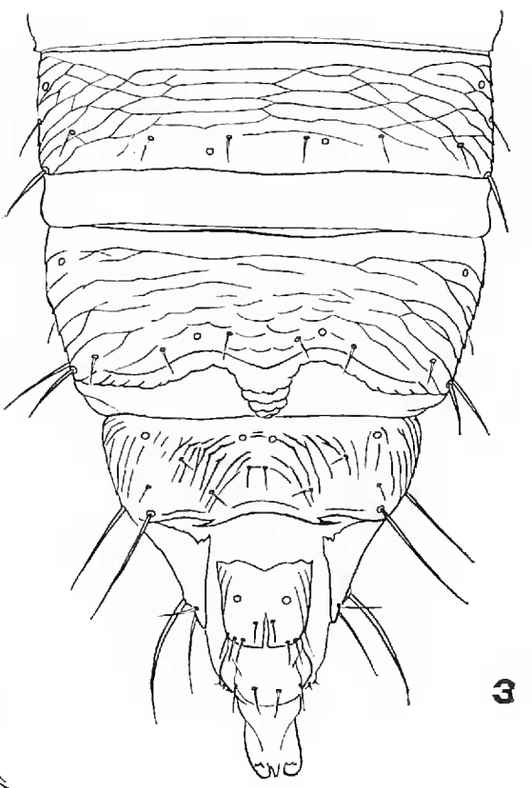


Fig. 1. Forewing of female (50 ×). Fig. 2. Head and pronotum of female (100 ×). Fig. 3. Male abdominal terga, segments VI to IX (100 ×).

collections are highly probable. The distribution of this genus of plants is circumpolar and a large number of species are known.

It is most noteworthy that Lindroth stated (*in litt.*) that "the southwest part of the island (Kodiak), on geological evidence is known to have been ice-free during the two last Pleistocene glaciations." The occurrence of the wingless specimen of *T. gramineae* on this isolated landmass or refugium possibly would indicate its early origin phylogenetically. Lindroth also collected at this location two other species of thrips, namely, the wingless, circumpolar *Anaphothrips secticornis*

Trybom and a brachypterous *Taeniothrips* (near *T. vulgatissimus* Haliday).

Various collections of thrips from subarctic regions have been reported by Richter (1928). Hukkinen (1936), Maltbaek (1932), and von Oettingen (1951, 1954) have added supplementary records. An examination of these articles, as well as Priesner's work (1928), discloses that the following species have been collected from *Carex* and *Calamagrostis: Chirothrips hamatus* Trybom, *Limothrips denticornis* Haliday, *Oxythrips brevistylus* (Trybom), *Anaphothrips gracillimus* Priesner, *Thrips funebris* Bagnall, and *T. paluster* Reuter. *Toxonothrips* was not reported by these authors and of the above species only *Limothrips denticornis* is circumpolar in its distribution. If *Toxonothrips* were widely distributed in northern latitudes as are the genera *Aptinothrips* (wingless), *Chirothrips, Limothrips, Anaphothrips,* and *Thrips,* the extensive collecting of the European thysanopterists most surely would have disclosed it. Stannard (1963) has suggested that "The present distribution of the Thysanoptera is such that the process of movement into glaciated areas has in some cases been negligible or slow and is not yet completed." Eventually additional collecting on *Carex* and *Calamagrostis* should fill in the distributional records showing that this thrips probably is to be found from Alaska southward through Yukon, British Columbia, Washington, and Oregon. The immature stages have not been collected.

Now that a series of specimens is available, it seems desirable to redescribe and illustrate *T. gramineae* in detail.

TOXONOTHRIPS Moulton

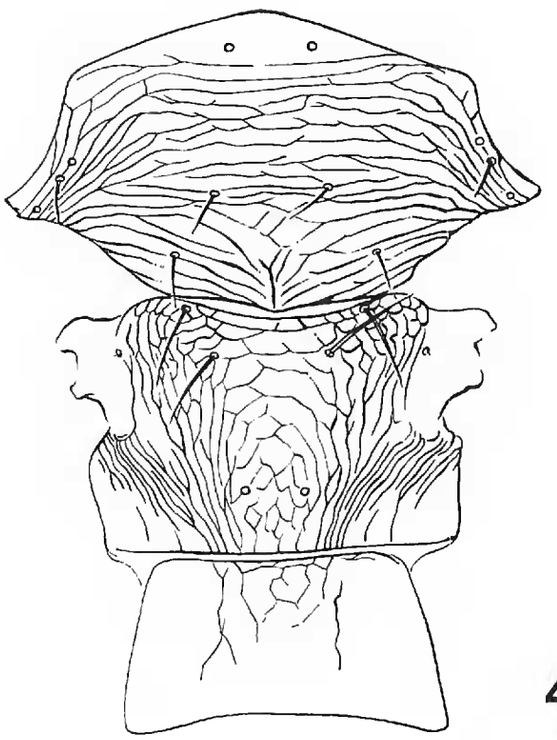
Moulton, D. 1927. Pan-Pac. Entomol., 4: 30–31.
Bailey, Stanley F. 1957. Bull. Calif. Insect Survey, 4: 205.

Antennae seven-segmented, style one-segmented; segment III with pedicel, III and IV with forked sensory trichomes (that on III in the male allotype is simple). Head slightly wider than long, rounded in front, cheeks rounded; all bristles reduced. Ocelli present in female. Maxillary palpi three-segmented. Prothorax wider than long; each outer posterior angle with two long bristles, all others reduced. Tarsi unarmed. Forewings with two longitudinal veins, hind vein regularly beset with bristles; general appearance similar to *Anaphothrips.* Abdominal segment VIII with comb. Male smaller than female; ocelli, wings, and claspers absent, abdominal sternites III and IV each with one oval sensory area.

TOXONOTHRIPS GRAMINEAE Moulton

Toxonothrips gramineae Moulton, 1927.
Toxonothrips gramineae fuscus Post, 1961.

FEMALE (macropterous). In general, color brown except for base of all femora,



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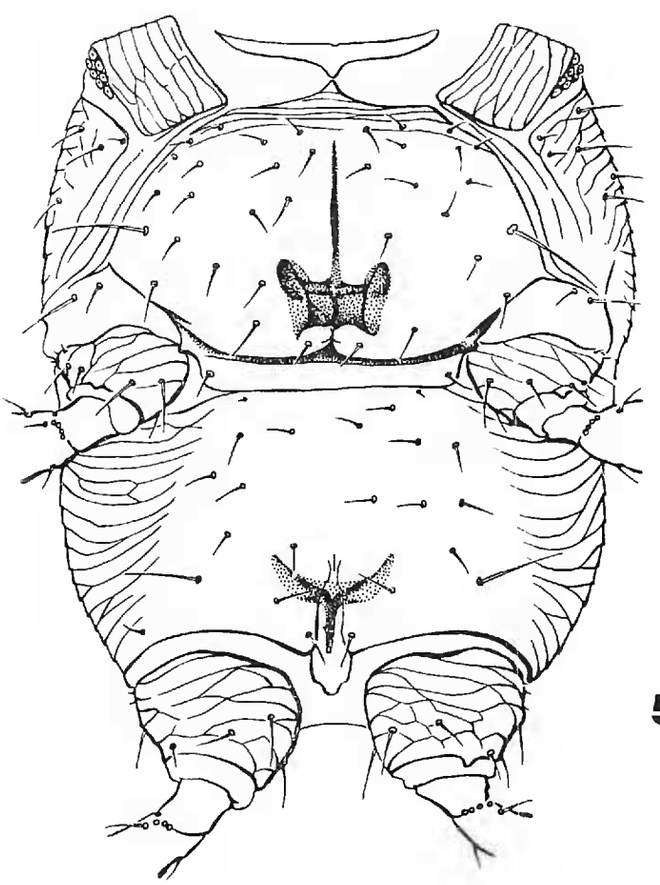

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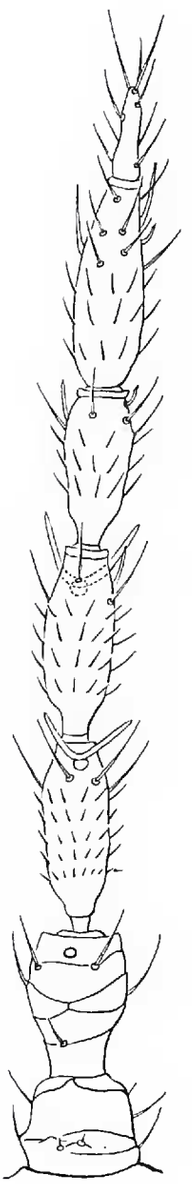

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Fig. 4. Meso- and metanota of female (125 ×). Fig. 5. Meso- and metasterna of female (75 ×). Fig. 6. Antenna of female (150 ×).

apex of all tibiae, all tarsi, all of antennal segment III, and basal portion of segments IV and V which are yellowish brown. Ocellar crescents orange-red. Forewings brown with whitish base, curved forward in many specimens.

Front of head (Fig. 2) broadly rounded and protruding in front of eyes. Cheeks arched. Head slightly longer than wide to slightly shorter than wide. Occiput with faint, transverse, anastomosing striae; setae outside ocellar triangle. Antennae (Fig. 6) with forked sensory trichomes on segments III and IV; IV with one outer, V with one inner and one outer, and VI with one inner and two outer simple sensory trichomes. Mouth cone short and with blunted tip. Maxillary palpi three-segmented.

Pronotum (Fig. 2) broader than long; all setae short except for the two pairs of posteroangular setae. All legs unarmed but inside of hind tibiae with a row of comb-like setae; all femora with translucent pores at base. Mesonota and metanota as in Fig. 4. Mesosterna and metasterna as in Fig 5. Shape of forewings (Fig. 1) varies from those of *Anaphothrips zeae* Moulton, for example, to those that are conspicuously scythe-shaped as in the holotype of *T. gramineae.*

Abdominal tergum VIII with a complete comb, sometimes sparse. Segment X with dorsal suture extending entire length.

The range in the critical measurements for specimens from Mineral and Camp Sacramento, California and Tidewater, Oregon are given below in mm. Those of the holotype as given by Moulton (1927) are in parentheses.

Total body length, 1.50–1.85 (1.50). Head, length 0.163–0.184 (0.175), width 0.174–0.189 (0.180). Pronotum, length 0.130–0.148 (0.130); width 0.204–0.233 (0.225). Mesothorax, width 0.278–0.315 (0.300). Greatest width of abdomen 0.278–0.348 (0.330). Length of antennal segments: I, 0.022–0.026 (0.024); II, 0.033–0.044 (0.033); III, 0.048–0.059 (0.048); IV, 0.046–0.052 (0.501); V, 0.041–0.052 (0.045); VI, 0.056–0.063 (0.060); VII, 0.024–0.030 (0.024); total length (0.270–0.317 (0.270). Outer posteroangular seta 0.044–0.070 (0.045). Forewing, length 0.847–1.07 (0.949); greatest width near base 0.074–0.093 (0.089); at middle 0.048–0.059 (0.059). Costa of forewing with 20–26 (22–23) setae. Fore-vein of forewing with 9–10 (9) setae and hind vein with 8–12 (10–11) setae.

Female (apterous). Similar to macropterous female in general structure and details of coloration. Ocelli present. Comb on abdominal segment VIII absent. Mesothoracic pelta with lateral margins smoothly rounded.

Total length (distended), 1.53. Head, length 0.174, width 0.185. Pronotum, length 0.141, width 0.218. Pronotal setae, length median posteromarginal seta 0.026; inner posteroangular seta 0.067; outer posteroangular seta 0.063. Mesothorax, width 0.211. Abdomen, width 0.340. Antennal segments: I, 0.022; II, 0.037; III, 0.052; IV, 0.044; V, 0.048; VI, 0.063; VII, 0.033; total length 0.299.

Male (apterous). Similar to female in general structure and coloration. Ocelli wanting. Posterior margin of eighth abdominal tergum (Fig. 3) bow-shaped and with a closely and faintly scalloped flange, which terminates in a prominent median lobe. Ninth abdominal tergum with a median raised area posteriad. Abdominal sterna III and IV each with one oval sensory area composed of stipple membrane. Terminal abdominal sterna as in Fig. 3. Sensory trichomes on antennal segments III and IV variable, either simple or forked; usually simple on III, forked on IV. Comb-like setae on hind tibiae absent.

The range in the critical measurements for specimens from Mineral and

Camp Sacramento, California are given below in mm. Those of the allotype as given by Moulton (1927) are in parentheses.

Total body length, 1.07–1.26 (0.88). Head, length 0.148–0.155 (1.33), width 0.144 (0.133). Pronotum, length 0.111–0.118 (0.108); width 0.152–0.170 (0.166). Mesothorax, width 0.170–0.185 (0.166). Greatest width of abdomen 0.226–0.241 (0.250). Outer posteroangular seta 0.022–0.026 (0.024). Length of antennal segments: I, 0.022 (0.024); II, 0.031–0.033 (0.033); III, 0.041 (0.042); IV, 0.037 (0.036); V, 0.033 (0.033); VI, 0.044–0.046 (0.048); VII, 0.022 (0.018); total length 0.232–0.234 (0.240). Outer posteroangular seta 0.022–0.026 (0.024).

The endothoracic reinforcement (Fig. 5) shows that this species belongs to group 3 (Tribe Thripini) as established by Priesner (1957) and the subtribe Thripina. The mesosternum has a spinula and furca while the metasternum lacks the spinula. The pelta, a little-used character in the Terebrantia, exhibits considerable variation between sexes and between the apterous and macropterous female.

The Alaskan specimen is the only apterous female known. Apterous males only have been collected. *T. g. fuscus* Post appears to fall within the range of variation in the species. Three specimens are in our series that have one antenna with a two-segmented style.

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